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EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/890,143

Applicant(s)

YAMAMOTO, MASAKI

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 28 May 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because there are conflicting labels and view numbers in Fig. 1(a), Fig. 1(b), Fig. 2(a), Fig. 2(b), Fig. 3(a), Fig. 3(b), Fig. 8(a), Fig. 8(b), Fig. 8(c), Fig. 9(a), and Fig. 9(b). For example, in Figures 1(a) and 1(b), the label "Fig. 1" is also present in the drawings. As noted in the Amendment filed 5/28/03 by the Applicant, FIG. 1 and the other respective figure labels on the bottom of the page were intended to be deleted. However, the drawings do not reflect this change. This objection may be obviated by deleting the label "Fig. 1" in Figures of 1(a) and 1(b) and correspondingly in the other figures.

A proposed drawing correction or corrected drawings reflecting those changes in the drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings in Figure 1(a) are objected to because it is believed that the word "vacuum" was intended to be deleted; however, the drawing itself does not reflect such a change.

A proposed drawing correction or corrected drawings reflecting those changes in the drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Art Unit: 2882

3. The drawings are objected to because both lines in the graph of Fig. 6 have been labeled (a) and (b). See Page 12, lines 4-11. The appropriate label should be deleted and reflected in the drawing.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (US Patent 6295164) in view of Murakami et al. (US Patent 6377655) and Murakami (US Patent 6160867).

5. With regards to claim 8, Murakami et al. ('164) discloses a method of forming an optical element comprising the steps of forming a multilayer film on a substrate (Abstract, last 4 lines, and Fig. 1A) and smoothing the film in accordance with an amount of adjustment to control a difference between a plurality of material such as amplitude (col. 12, lines 48-55).

However, Murakami et al. ('164) does not disclose film of high refractive index material and low refractive index material in this embodiment nor cutting a portion of the surface to control a phase.

Murakami et al. ('164) further discloses high refractive index material and low refractive index material (col. 4, lines 1-10) in another embodiment. Murakami et al. ('655) teaches cutting a portion of the surface as equivalent to smoothing (col. 14, lines 55-65). Murakami teaches controlling a phase (col. 1, lines 20-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the film of high and low refractive indices of Murakami et al. ('164) in one embodiment with the method of Murakami et al. ('164), since these films are functionally equivalent in that they both are used as layers of film for reflectance in a mirror. It would have been within routine skill in the art to substitute one for the other. Secondly, it would have been within general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Lastly, one would be motivated to use high and low refractive indices for films for their high reflectivity properties (col. 12, lines 29-43) as implied from Murakami et al. ('164).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have cutting of Murakami et al. ('655) with the control of phase of Murakami with the method of Murakami et al. ('164), which is explained with motivation as follows.

With regards to cutting, since Murakami et al. ('655) teaches the art-recognized equivalence of cutting and smoothing (col. 14, lines 55-65), it would have been obvious to

Art Unit: 2882

substitute one type of method for the other. One would be motivated to having cutting to polish the mirror as implied from Murakami et al. ('655) for more reflectivity.

With regards to control of phase, one would be motivated to control thickness and thus phase of the wave for better matching and higher reflectance as implied from Murakami (col. 1, lines 20-26).

6. With regards to claim 9, Murakami et al. ('164) in view of Murakami et al. ('655) and Murakami suggest a method as recited above.

However, Murakami et al. ('164) does not disclose a number of cycles larger than necessary to substantially saturate a reflectance.

Murakami teaches a number of cycles larger than necessary to substantially saturate a reflectance (col. 1, lines 20-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the number of cycles of Murakami with the suggested method of Murakami et al. ('164) in view of Murakami et al. ('655) and Murakami, since one would be motivated to have that many cycles to obtain as high an interface-amplitude reflectance as possible as implied from Murakami (col. 1, lines 20-25).

Secondly, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the number of cycles with the suggested device of Murakami et al. ('164) in view of Murakami et al. ('655) and Murakami, since where the general conditions of a claim are disclosed in the prior art, discovering the workable ranges involves only routine skill

Art Unit: 2882

in the art. One would be motivated to have that many cycles to obtain as high an interface-amplitude reflectance as possible as implied from Murakami (col. 1, lines 20-25).

7. With regards to claim 10, Murakami et al ('164) further discloses smoothing the film in accordance with an amount of adjustment to control a difference between a plurality of material such as amplitude (col. 12, lines 48-55).

8. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. ('164), in view of Murakami et al. ('655), Murakami, and Itoh et al. (US Patent 5319695).

For purposes of being concise, Murakami et al. ('164) in view of Murakami et al. ('655) and Murakami suggests a method as recited above. Murakami et al. ('164) also discloses molybdenum (col. 2, lines 29-35) as a correction film, which has a large difference between a refractive index n to incident rays and 1 as well as having a small extinction coefficient k to the incident rays (inherent).

However, Murakami et al. ('164) does not disclose molybdenum on the multilayer film.

Itoh et al. teaches a film of molybdenum on the multilayer film (Fig. 1, #2).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the film of molybdenum of Itoh et al. with the suggested method of Murakami et al. ('164), in view of Murakami et al. ('655), and Murakami, since one would be motivated to use molybdenum to help intensify reflections in a mirror with x-rays as implied from Itoh et al. (col. 2, lines 65-69, and col. 3, lines 1-6).

Response to Arguments

9. Applicant's arguments with respect to claims 8-11 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's arguments filed 5/28/03 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., roughening a surface) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2882

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk

June 7, 2003



DAVID V. BRUCE
PRIMARY EXAMINER